

Enamel May Still Need Phosphoric Acid Etch with Self-Etch Resin Luting Agents (3/08)

Frankenberger R, Lohbauer U, Schaible RB, Nikolaneko SA, Naumann M. Luting of ceramic inlays *in vitro*: Marginal quality of self-etch and etch-and-rinse adhesives versus self-etch cements. *Dent Mater* 2008;24:185-191.

Resin-based luting agents are indicated for luting most all ceramic, indirect restorations. Resin luting agents should be preceded by a dental adhesive before cementation, which traditionally has been provided by either etch-and-rinse or self-etch adhesives. The most recently marketed resin cements are formulated to provide both simultaneous etching and adhesion to the dentin/enamel substrate. This study evaluated the marginal integrity of ceramic inlays luted with different adhesives and resin cements before and after thermo-mechanical loading. MOD cavities with one proximal box beneath the cemento-enamel junction were prepared in 72 extracted human third molars. IPS Empress inlays were luted with nine combinations of adhesive and luting composite or self-etch cement alone (n=8): Prime & Bond NT Dual-Cure + Calibra; XP BOND SCA + Calibra; XP BOND SCA light-cured + Calibra; Syntac + Variolink II; Multilink Primer + Multilink; AdhesSE Dual Cure + Variolink II; ED Primer + Panavia F 2.0; RelyX Unicem; and Maxcem.



Marginal quality was analyzed under a scanning electron microscope (SEM) using epoxy resin replicas before and after thermo-mechanical loading (100,000 × 50 N and 2500 thermocycles between +5 and +55 °C). Results found that all systems involving the etch-and-rinse adhesives resulted in significantly higher percentages of gap-free margins in enamel than all other luting systems. For dentin margins, all groups exhibited similar amounts of gap-free margin areas except for two groups which exhibited more marginal gaps (Prime and Bond NT + Calibra and Maxcem). **The authors concluded that overall etch-and-rinse adhesives appear to be the most promising for the luting of ceramic inlays, whereas self-etch adhesives and self-etch cements are not as efficient as etch-and-rinse adhesives in enamel bonding performance.**

DECS Comment: Self-etch resin luting agents hold the promise of possibly lowering the technique sensitivity usually present in the application of etch-and-rinse adhesives. Furthermore, self-etch luting systems possibly could address concerns of adhesive layers preventing the seating of restorations. Self-etch adhesives do have limitations, especially in the ability to adequately etch enamel. In fact, some self-etch adhesive products recommend an additional enamel etch procedure before the self-etch adhesive is applied. Under the conditions of this study all but two groups (one self-etch resin luting agent and one etch-and-rinse adhesive-resin luting agent combination) provided similar marginal integrity on dentin finish lines. However, only the etch-and-rinse adhesives provided better marginal integrity on enamel. This study reinforces other studies that suggest that restoration margins may benefit from an additional acid etch of enamel margins before using a self-etch luting agent.

References

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